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Modulators of Attention-Emotion Interactions in Borderline Personality Disorder: Dissociation, Self-Reference, and Symptom Improvement

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Borderline personality disorder is characterized by instability in affect, interpersonal relationships, and identity, as well as potentially self-damaging impulsivity. Evidence from previous studies mainly supports the notion that individuals with borderline personality disorder show elevated emotional sensitivity accompanied by an impaired ability to regulate emotional responses. On the neural level, this is reflected by limbic hyperactivity and disturbed activity of prefrontal control regions. In both, sensitivity to emotional stimuli as well as emotion regulation, attention and emotion are known to interact. Regarding borderline personality disorder compared to healthy control participants, due to patients' higher emotional sensitivity, previous studies proposed that emotional stimuli capture more attention than neutral stimuli. Also, individuals with borderline personality disorder were expected to have difficulties shifting attention away from emotional stimuli as an emotion regulation strategy. However, up to this point, such attention-emotion interaction differences could not be clearly supported. To clarify factors influencing the interaction between attention and emotion in BPD, three studies were conducted. Specifically, three modulators of emotion dysregulation in borderline personality disorder, namely dissociation, self-reference, and symptom improvement were examined regarding their influence on attention-emotion interactions and thus their contribution to the heterogeneity in the respective findings.

In the first study, the role of dissociation for attention-emotion interactions was examined. The well-established emotional Stroop task was studied in 20 healthy control participants and 40 individuals with borderline personality disorder during functional magnetic resonance imaging. Half of the participants with borderline personality disorder underwent a dissociation induction before performing the Stroop task. Compared to individuals with borderline personality disorder without dissociation induction, those who received the dissociation induction showed prolonged reaction times and stronger activity primarily in brain areas associated with verbal processing and response inhibition (left dorsolateral and inferior frontal gyrus; Brodmann area 9/46) in response to negative compared to neutral stimuli. This suggests that negative stimuli capture attention particularly strongly when dissociation is induced in borderline personality disorder.

In a second study, the influence of self-reference on emotion processing and thus on the amount of attention captured by an emotional stimulus was examined. Thirty individuals with borderline personality disorder and 30 healthy control participants evaluated and later recalled emotional and neutral stimuli with self-, other- or no reference. Individuals with borderline personality disorder evaluated positive and neutral stimuli more negatively than healthy control participants if they referred to themselves or had no reference. There were no group differences in the memory task. Altered evaluations were associated with internal, stable and global attributions particularly of negative everyday life events. These data were interpreted in the frame of a negative self-concept as well as overgeneralization in borderline personality disorder, which may not allow integrating self-related, positive information.

In a third study, it was examined how neural correlates of distraction from emotional stimuli as one emotion regulation strategy change in borderline personality disorder after symptom improvement following dialectical behavior therapy, which includes the acquisition of emotion regulation skills. Before and after a 12-week residential dialectical behaviour therapy, 31 individuals with borderline personality disorder underwent functional magnetic resonance imaging while they performed either a distraction task or a passive viewing task during the presentation of negative or neutral pictures. These data were compared to those of 15 individuals with borderline personality disorder who

continued their usual treatment and 22 healthy control participants. In patients with borderline personality disorder who underwent dialectical behavior therapy, self-reported borderline personality disorder symptom improvement correlated with an activity decrease over time in an area involved in distraction (right inferior parietal lobe / supramarginal gyrus) during distraction from negative compared to neutral stimuli. Additionally, dialectical behaviour therapy responders tended towards increased activity in an area associated with automatic emotion processing and regulation (right perigenual anterior cingulate) during distraction from negative rather than neutral pictures. These findings were interpreted as lower emotional susceptibility during distraction after borderline personality disorder symptom improvement.

The three studies demonstrated that induced dissociation, self-reference, and symptom improvement affect different aspects of attention-emotion interactions in borderline personality disorder, namely distraction by emotional stimuli or distraction as an emotion regulation strategy. They suggest that high levels of dissociation are associated with preferential processing of negative stimuli, while self-reference negatively biases particularly the evaluation of positive and neutral stimuli in borderline personality disorder. Moreover, symptom improvement may alter the neural correlates of attention-emotion processing. Future studies need to clarify the interactions of the three examined modulators, as well as the specificity of the results for certain attention-emotion interactions or paradigms and borderline personality disorder. Possible implications for borderline personality disorder psychotherapy include skills training to reduce high levels of dissociation, interventions ameliorating self-esteem, and cognitive interventions to alter dysfunctional attributions.